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CAN BINOCULAR RIVALRY BE SUPPRESSED BY PRACTISE?

On page 280 in Charles S. Myers's "Text-book of Experimental Psychology," 1909, is the following statement under the heading of binocular rivalry:

> When corresponding points are stimulated by unlike stimuli, either combination or rivalry results. Colored squares of equal size and brightness may be combined without difficulty. The more the two presentations differ in contour or in brightness, or the more they are incongruous in general meaning, the more impossible becomes binocular combination. Instead of combining, the two impressions alternate, sometimes one, sometimes the other, occupying the field of consciousness. The field can be to a great extent limited to one or other eye by the control of attention or by the relative intensity or insistence of the sensations, either retinal or muscular, derived from the two eyes. *One of the images can be completely suppressed by practise.*[1]

The last statement in this quotation is so much at variance with the results which I have obtained in my experiments in binocular rivalry, that I venture to restate some of them. During the years 1898 and 1899 I carried on a series of experiments[2] in binocular rivalry and many of these experiments have been repeated at intervals during the last ten years, some of them within the last year. In every case I have found uniformity of results. The suppression of one of the images which Professor Myers speaks of as a fact in binocular rivalry was one of the problems in my experiments. The stimuli which I used in order to bring about the rivalry were red and green squares, ten millimeters in size. These squares were crossed by black diagonal lines. Upon the red field the direction of the lines was from the upper left-hand corner to the lower right-hand corner, while the lines upon the green field ran from the upper right-hand corner to the lower left-hand corner, so that when the fields were combined the lines crossed each other at right angles. A modification of the Brewster stereoscope was used for combining the fields. The first experiment was to determine whether the will was effective in suppressing one of the fluctuating images. I used nine subjects. In no single case was any subject able to control the rivalry to more than a very limited extent. No subject was able to reduce the number of rivalry phases which took place in any given time. The attempt to hold the red field, which was the field presented to the right eye, resulted in lengthening the time this field remained in consciousness by only 15 per cent., while the attempt to hold the green field, the field presented to the left eye, gave an increase in time for this field of 16 per cent. That is, the subjects by will power could increase the length of time of the normal rivalry phase of either of the images by 15 to 16 per cent. This increase was brought about by fixing the attention upon the image which the subject wished to hold in consciousness to the exclusion of the other image. None of the subjects had had *extensive* practise in attempting to suppress the rivalry. Some of them persisted through four or five sittings in their attempt to do so, but were unsuccessful. However, in my own case I have tried at different times during the last ten years to bring about the suppression of rivalry which Professor Myers reports as an established fact in his "Text Book of Experimental Psychology."

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[1] Italics mine.

[2] Monograph Supplements, *Psychological Review*, Vol. III., No. 1.

This practise in attempting to suppress one of the images has been carried on under many conditions. I have used a moving field for one eye with the field for the other eye at rest; fields of different areas; a field of figures opposed to one without figures; lights of different intensities for the two fields, and yet I have found no condition wherein one of the images can be suppressed. I have found this to be true, however, with naïve subjects: During the few minutes when the phenomenon of binocular rivalry was first presented to them, they claimed that they were able to hold one of the images in consciousness and to suppress the other, but such subjects on further experience, and more careful observation, found that they were not able to do what at first they thought they had done.

Another form of experiment in binocular rivalry has likewise been unsuccessful so far as suppression of one of the two rivalry images is concerned. I had eye-glasses prepared with red and green lenses. When these were adjusted only red light of a medium intensity entered the right eye, and only green light of the same intensity entered the left eye. The outer world then appeared to me alternately red and green, following the law of binocular rivalry. I have worn these eye-glasses for days at a time, but the rivalry was never suppressed by this practise. In this form of the experiment a possible error in observation might arise for the untrained observer, from the fact that shortly after the glasses are placed before the eyes, the sensations of color arising from the two differently colored lenses run down to such a degree that it is difficult to distinguish the changes of the rivalry because of the paleness of the alternating colors. However, I have always been able to detect the presence of rivalry between the red and green fields under all conditions.

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